

What is claimed is:

1 1. A unified in-building communication method in a communication system
2 connected to a public land mobile network, a public switched telephone network/integrated
3 services digital network, and an Internet protocol network, said method comprising the steps of:
4 forming a common cell area in which a wireless public communication service and a
5 wireless in-building communication service are available in a prescribed local area;
6 connecting a mobile switching center to said public land mobile network;
7 providing communications functions to a registered mobile terminal when said registered
8 mobile terminal is located in said common cell area; and
9 not providing said communications functions to an unregistered mobile terminal, and
10 bypassing said unregistered mobile terminal.

1 2. The method of claim 1, said communication system and said public land mobile
2 network sharing a base station.

1 3. The method of claim 1, said bypassed unregistered mobile terminal sharing a base
2 station of said communication system.

1 4. The method of claim 1, said registered mobile terminal corresponding to an
2 extension telephone of said communication system when said registered mobile terminal is

3 located in said common cell area, said registered mobile terminal not corresponding to said
4 extension telephone when said registered mobile terminal is not located in said common cell
5 area.

1 5. The method of claim 1, said communications functions including voice and data
2 services.

1 6. The method of claim 1, said common cell area corresponding to at least one
2 building.

1 7. The method of claim 1, said common cell area corresponding to an enclosed
2 three-dimensional space.

1 8. The method of claim 7, said space corresponding to a building.

1 9. The method of claim 4, said registered mobile terminal corresponding to a
2 wireless terminal outputting and inputting signals through air, said extension telephone
3 corresponding to a wire telephone outputting and inputting signals through cable.

1 10. The method of claim 1, outputting signals from said registered mobile terminal to
2 at least one antenna mounted in said common cell area, said at least one antenna being coupled to

3 said communication system.

1 11. The method of claim 1, said registered mobile terminal communicating with one
2 selected from among a wire extension terminal and a wireless extension terminal, and said
3 registered mobile terminal wirelessly receives a data service through said Internet protocol
4 network.

1 12. The method of claim 1, said wireless in-building communication service being
2 performed in a single cell so that a handoff does not occur.

3 13. The method of claim 12, wherein for the same service provider, when said
4 registered mobile terminal moves out of said common cell area and moves into said public land
5 mobile network, the handoff does not occur.

1 14. The method of claim 12, wherein for the same service provider, when said
2 registered mobile terminal moves out of said public land mobile network and moves into said
3 common cell area, the handoff does not occur.

1 15. A unified in-building communication apparatus connected to a public land mobile
2 network, a public switched telephone network/integrated services digital network, and an Internet
3 protocol network, said apparatus comprising:

4 at least one in-building repeater forming a public/private common cell in which said
5 public land mobile network and an in-building private wireless network are commonly used;

6 a call manager controlling a wireless call of a registered extension mobile terminal of said
7 in-building private wireless network, controlling operation and maintenance of radio resources,
8 controlling private base station controller resources, and controlling registration and function
9 setup of extension mobile subscriber corresponding to said extension mobile terminal; and

10 a public/private communication service unit being connected to said public land mobile
11 network, said public switched telephone network/integrated services digital network, and said
12 Internet protocol network, said public/private communication service unit performing an
13 incoming/outgoing call from and to an office line and an extension call through an in-building
14 private branch exchange, performing wireless communication of a registered mobile terminal in a
15 base station under control of said call manager, and performing communication of an Internet
16 protocol terminal.

1 16. The apparatus of claim 15, said at least one repeater being connecte d to an
2 antenna corresponding to a predetermined area, said extension mobile terminal distinguishing a
3 radio wave of said private in-building wireless network from a radio wave of said public land
4 mobile network according to different pilot strength.

1 17. The apparatus of claim 15, said call manager being connected to said
2 public/private communication service unit through a local area network cable.

1 18. The apparatus of claim 15, said at least one repeater corresponding to a plurality
2 of repeaters.

1 19. The apparatus of claim 18, said public/private communication service unit
2 comprising:

3 an Internet protocol-private branch exchange connected to said public switched telephone
4 network/integrated services digital network, a subscriber line interface, and a digital line
5 interface, performing mobile switching on said extension mobile terminal service, and enabling
6 incoming/outgoing calls through an office line and an extension call;

7 a private base station controller connected to said Internet protocol-private branch
8 exchange and a global positioning system antenna, allocating a vocoder in response to an
9 outgoing call request originated from a mobile station, processing a test call at an operator's
10 request, and processing a circuit mode data call and a packet mode data call in addition to a voice
11 call; and

12 a private base transceiver subsystem connected to said private base station controller,
13 performing call processing control on a service associated with a code division multiple access
14 system, said private base transceiver subsystem being connected to said plurality of repeaters
15 having different pilot strengths, such that said extension mobile terminal can acquire a base
16 station of said in-building wireless network.

1 20. The apparatus of claim 19, said private base transceiver subsystem performing a
2 handoff power-up function in accordance with Telecommunications Industry
3 Association/Electronics Industries Association Interim Standard 95-B air interface specification.

1 21. The apparatus of claim 20, said code division multiple access system
2 corresponding to a code division multiple access V.2 system.

1 22. The apparatus of claim 21, said private base station controller and said private
2 base transceiver subsystem employing a code division multiple access technique.

1 23. An apparatus, comprising:

2 at least one in-building repeater forming a public/private common cell in which a public
3 land mobile network and an in-building private wireless network are operating and available;

4 a call manager controlling a wireless call of a registered extension mobile terminal of said
5 in-building private wireless network, controlling operation and maintenance of radio resources,
6 controlling private base station controller resources, and controlling registration and function
7 setup of extension mobile subscriber corresponding to said extension mobile terminal; and

8 a public/private communication service unit being connected to said public land mobile
9 network, a public switched telephone network/integrated services digital network, and an Internet
10 protocol network, said public/private communication service unit performing an
11 incoming/outgoing call from and to an office line and an extension call through an in-building

12 private branch exchange, performing wireless communication of a registered mobile terminal in a
13 base station under control of said call manager, and performing communication of an Internet
14 protocol terminal.

1 24. The apparatus of claim 23, said apparatus corresponding to a unified in-building
2 communication apparatus connected to said public land mobile network, said public switched
3 telephone network/integrated services digital network, and said Internet protocol network.

1 25. The apparatus of claim 23, said public land mobile network corresponding to a
2 wireless public communication service.

1 26. The apparatus of claim 23, said apparatus providing communications functions to
2 said registered extension mobile terminal located in said public/private common cell.

1 27. The apparatus of claim 26, said apparatus not providing communications
2 functions to an unregistered mobile terminal located in said public/private common cell.